【Sequence Listing】

<110> Lifenza Co., Ltd.

<120> PROTEIN WITH ACTIVITY OF HYDROLYZING AMYLOPECTIN, STARCH, GLYCOGEN AND AMYLOSE, GENE ENCODING THE SAME, CELL EXPRESSING THE SAME, AND PRODUCTION METHOD THEREOF

<150> KR2004-0006186

<151> 2004-01-30

<160> 4

<170> KopatentIn 1.71

<210> 1

<211> 647

<212> PRT

<213> Artificial Sequence

<220>

<223> E. coli BL21(DE3)pLysS

<400> 1

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Ser Pro Ile Val Val Ala Arg Tyr Ile Leu Arg Arg Asp Cys Thr Thr
20 25 30

Val Thr Val Leu Ser Ser Pro Glu Ser Val Thr Ser Ser Asn His Val
35 40 45

Glu Leu Ala Ser His Glu Met Cys Asp Ser Thr Leu Ser Ala Ser Leu
50 55 60

Tyr Ile Tyr Asn Asp Asp Tyr Asp Lys Ile Val Thr Leu Tyr Tyr Leu
65 70 75 80

Thr Ser Ser Gly Thr Thr Gly Ser Val Thr Ala Ser Tyr Ser Ser Ser
85 90 95

Leu Ser Asn Asn Trp Glu Leu Trp Ser Leu Ser Ala Pro Ala Ala Asp
100 105 110

Ala Val Glu Ile Thr Gly Ala Ser Tyr Val Asp Ser Asp Ala Ser Ala
115 120 125

Thr Tyr Ala Thr Ser Phe Asp Ile Pro Leu Thr Thr Thr Thr Ser
130 135 140

Ser Ser Ser Ala Ser Ala Thr Ser Thr Ser Ser Leu Thr Thr Thr Ser
145 150 155 160

Ser Val Ser Ile Ser Val Ser Val Pro Thr Gly Thr Ala Ala Asn Trp
165 170 175

Arg Gly Arg Ala Ile Tyr Glu Ile Val Thr Asp Arg Phe Ala Arg Thr
180 185 190

Asp Gly Ser Thr Thr Tyr Leu Cys Asp Val Thr Asp Arg Val Tyr Cys
195 200 205

Gly Gly Ser Tyr Glu Gly Ile Ile Asn Met Leu Asp Tyr Ile Glu Gly
210 215 220

Met Gly Phe Thr Ala Ile Trp Ile Ser Pro Ile Val Glu Asn Ile Pro
225 230 235 240

Asp Asp Thr Gly Tyr Gly Tyr Ala Tyr His Gly Tyr Trp Met Lys Asp
245 250 255

Ile Phe Ala Leu Asn Thr Asn Phe Gly Thr Ala Asp Asp Leu Ile Ala

260 265 270

Leu Ala Thr Glu Leu His Asn Arg Gly Met Tyr Leu Met Val Asp Ile
275 280 285

Val Val Asn His Phe Ala Phe Ser Gly Ser His Ala Asp Val Asp Tyr
290 295 300

Ser Glu-Tyr Phe Pro Tyr Ser Ser Glu Asp Tyr Phe His Ser Phe Cys
305 310 315 320

Trp Ile Thr Asp Tyr Ser Asn Glu Thr Asn Val Glu Gln Cys Trp Leu
325 330 335

Gly Asp Asp Thr Val Pro Leu Val Asp Val Asn Thr Glu Leu Asp Thr
340 345 350

Val Lys Ser Glu Tyr Gln Ser Trp Val Glu Glu Leu Ile Ala Asn Tyr
355 360 365

Ser Ile Asp Gly Leu Arg Ile Asp Thr Val Lys His Val Glu Met Asp
370 375 380

Phe Trp Ala Pro Phe Glu Glu Ala Ala Gly Ile Tyr Ala Val Gly Glu
385 390 395 400

Val Phe Asp Gly Asp Pro Ser Tyr Thr Cys Pro Tyr Glu Glu Asn Leu
405 410 415

Asp Gly Val Leu Asn Tyr Pro Val Tyr Tyr Pro Val Val Ser Ala Phe
420 425 430

Glu Ser Val Ser Gly Ser Val Ser Ser Leu Val Asp Met Ile Asp Thr
435 440 445

Leu Lys Ser Glu Cys Thr Asp Thr Thr Leu Leu Gly Ser Phe Leu Glu
450 455 460

Asn Glu Asp Asn Pro Arg Phe Pro Ser Tyr Thr Ser Asp Glu Ser Leu
465 470 475 480

Ile Lys Asn Ala Ile Ala Phe Thr Met Leu Ser Asp Gly Ile Pro Ile
485 490 495

Ile Tyr Tyr Gly Glu Glu Gln Gly Leu Asn Gly Gly Asn Asp Pro Tyr
500 505 510

Asn Arg Glu Ala Leu Trp Leu Thr Gly Tyr Ser Thr Thr Ser Thr Phe
515 520 525

Tyr Lys Tyr Ile Ala Ser Leu Asn Glu Ile Arg Asn Glu Ala Ile Tyr
530 535 540

Lys Asp Asp Thr Tyr Leu Thr Tyr Glu Asn Trp Val Ile Tyr Ser Asp
545 550 555 560

Ser Thr Thr Ile Ala Met Arg Lys Gly Phe Thr Gly Asn Glu Ile Ile
565 570 575

Thr Val Leu Ser Asn Leu Gly Thr Ser Gly Ser Ser Tyr Thr Leu Thr
580 585 590

Leu Ser Asn Thr Gly Tyr Thr Ala Ser Ser Val Val Tyr Glu Ile Leu
595 600 605

Thr Cys Thr Ala Val Thr Val Asp Ser Ser Gly Asn Leu Ala Val Pro
610 615 620

Met Ser Ser Gly Leu Pro Lys Val Phe Tyr Glu Glu Ser Gln Leu Val
625 630 635 640

Gly Ser Gly Ile Cys Ser Met
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<211> 1946
<212> DNA
<213> Artificial Sequence

<220>
<223> E. coli BL21(DE3)pLysS

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aatacaaatt ttggtactgc agacgatttg atagcgttgg ctacggaatt gcataatcgc 840

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tggattacag attactcgaa tcagacaaac gttgagcagt gctggcttgg cgacgatact 1020

gttcctctcg tggacgtcaa tacccaactt gacaccgtga aaagtgaata tcaatcctgg 1080

gttcaagaac ttatagctaa ttactctatt gacggcctaa gaattgacac cgtcaagcac 1140

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gtattcgacg gtgatccatc ctacacatgt ccatatcagg aaaatcttga cggtgtcttg 1260

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<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> L. starkeyi primer 1(sense)

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<210> 4
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> L. starkeyi primer 2(antisense)

<400> 4
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